

**NATURAL RESOURCE CONSERVATION SERVICE  
CONSERVATION PRACTICE STANDARD**

**PRESCRIBED GRAZING**

(Acre)

**CODE 528A**

**DEFINITION**

The controlled harvest of vegetation with grazing or browsing animals, managed with the intent to achieve a specified objective.

**PURPOSES**

This practice may be applied as a part of a conservation management system to accomplish one or more of the following purposes:

- Improve or maintain the health and vigor of selected plant(s) and to maintain a stable and desired plant community.
- Provide or maintain food, cover, and shelter for animals of concern.
- Improve or maintain animal health and productivity.
- Maintain or improve water quality and quantity.
- Reduce accelerated soil erosion and maintain or improve soil condition for sustainability of the resource.

**CONDITIONS WHERE THIS PRACTICE APPLIES**

This practice may be applied on cropland, pastureland, hayland, wildlife land, and other agricultural lands where grazing and/or browsing animals are managed.

**CRITERIA**

**General Criteria Applicable for All the Purposes Stated Above.**

Removal of herbage will be in accordance with production limitations, plant sensitivities, and management goals using the Iowa Field Office Technical Guide, USDA/NRCS National Range and Pasture Handbook, and other references as guidance.

Frequency of defoliations and season of grazing will be based on the rate and physiological conditions of plant growth. Climatic conditions, pasture management, soil fertility, and competition are among several factors determining the growth rate of forage. During periods of low moisture or periods of plant stress, the frequency of defoliation should decrease. During periods of adequate moisture or in case of vigorous plant growth, defoliation can be more frequent.

Duration, season of use, and intensity of grazing will be based on desired plant health, expected productivity of key forage species, and management unit objectives. Plant health and productivity will be maintained by managing weeds, fertility, and the extent of plant removal by the livestock.

Maintain enough vegetative cover or plant residue to prevent accelerated soil erosion due to wind or water.

Application of this practice will manipulate the intensity, frequency, duration, and season of grazing to:

- Ensure optimum water infiltration,
- Maintain or improve riparian and upland vegetation,
- Protect stream banks from erosion,
- Manage for deposition of fecal material away from water bodies,
- Promote healthy ecologically and economically stable plant communities on both upland and bottomland sites, which meet landowner objectives, and
- When necessary, develop stream crossings to better manage the grazing system. Stream crossing should be constructed to provide a safe crossing for the livestock and also protect the quality of the water. Heavy Use Protection Standard (561) can be used to design a crossing to meet these objectives.

Grazing and rest periods should be scheduled to meet the desired objectives for the plant communities and associated resources in each pasture including the grazing animals. Rest periods should be based on the following general guidelines:

**Cool season grasses:**

- ◆ 14 – 16 days during first rotation (April).
- ◆ 20 – 30 days during fast growth (May – mid-June).
- ◆ 30 – 40 days during slow growth (summer or cold).
- ◆ 20 – 30 days during fall.

**Legumes:**

- ◆ 24 – 32 days throughout the growing season.
- ◆ 40 – 45 days for seed production.

**Warm Season Grasses:**

- ◆ 14 – 21 days during early fast growth.
- ◆ 21 – 28 days during normal growing conditions.
- ◆ 35 – 45 days during slower growth.

Livestock movements should be based on plant growth and utilization and not on calendar dates. Forage use should not exceed 50 percent of the standing forage during any grazing period. A system of “take ½ leave ½” can be implemented to meet this goal. It may be necessary to remove more forage in preparation for forage improvement practices. Table 1 can be used as a guide for forage use and livestock movement.

Monitoring of forage health conditions should occur on a regular basis. Grazing programs will need to be changed or adjusted when significant changes in plant vigor or composition, animal kinds and class, and management objectives occur.

**Additional Criteria for Improved Animal Health and Productivity.**

Grazing should be applied in accordance with forage quality and quantity criteria that best meets the production requirements for the kind and/or class of animal. Productivity of the grazing land may be improved by moving from continuous grazing of one pasture to a rotational grazing system, or from a rotational system to a

managed intensive grazing system. Managed intensive grazing systems result in more efficient utilization of the forage resources by the grazing animal.

Movement of animals will be in a manner to improve and/or maintain animal health and performance, and to reduce or prevent spread of disease, parasites, and contact with harmful insects and toxic plants.

Animal health is improved by rotational or management intensive grazing because the life cycle of some animal parasites is broken when the host animal is not present, as would be the case when animals are completely removed from a pasture/paddock on a periodic basis.

#### **Additional Criteria For Water Quality.**

Duration, intensity, frequency, and season of grazing in or near surface waters will be applied in such a manner that the impacts to vegetative and water quality will be positive.

A “flash grazing” system may be utilized along streams to manage vegetation without degrading the resource. If permanent vegetation cannot be maintained at access areas, then these areas should be protected utilizing criteria established in conservation practice standard Heavy Use Area Protection (561), or alternative means of watering should be considered.

Duration, intensity, frequency, and season of grazing will be applied to enhance nutrient cycling by better manure distribution and increased rate of decomposition.

Water facilities and mineral and salt feeders will be strategically located to promote uniform distribution of grazing pressure for better distribution of manure. Areas being grazed should be

within a quarter mile and preferably 600 - 800 feet of a watering facility. To get the maximum use of available forage, water should be within 600 - 800 feet of the grazing area. When distances get greater than this the forage past those distances are lightly grazed, if at all.

#### **Additional Criteria For Soil Erosion and Condition.**

Duration, intensity, frequency, and season of grazing shall be managed to minimize soil compaction or other detrimental effects.

Duration, intensity, frequency, and season of grazing shall be applied to sustain vegetative cover to minimize soil erosion.

As much as possible, select areas for cattle lanes that have low soil erosion potential and where runoff does not concentrate. Provide erosion protection when necessary.

Duration, intensity, frequency, and season of grazing near known cultural resource sites will be considered when planning this practice. This practice may have the potential for adversely affecting cultural resources and will be planned and applied in a technically sound manner so that any potential impacts to cultural resources will be minimized and/or avoided.

#### **Additional Criteria For Maintaining a Stable and Desired Plant Community.**

Limiting access to herbaceous riparian areas by grazing livestock, through the use of “flash grazing”, provides a method of manipulating vegetation to prevent encroachment of undesirable species and improve the vigor of desirable species. Riparian areas will be managed by:

- Maintaining or adjusting stocking rates so that vegetation on the shoreline or streambank is not damaged to a degree that causes barren soil areas.
- Intensive grazing of the shoreline or streambank for short periods of time (flash grazing) during times when the soil is not saturated.

Grazing riparian areas require very careful management to assure the site is not overgrazed or damaged from livestock activity. This technique may be incorporated in a prescribed grazing plan only if the landuser fully understands the riparian grazing system and is capable of proper management of the riparian area.

Well managed pastures are pastures whose productivity (plant and animal) is optimized while there is no harm occurring to soil, water, and air quality. (Refer to USDA Guide to Pasture Condition Scoring and USDA Pasture Condition Score Sheet when accessing for pasture health condition at the following web site: <http://www.ftw.nrcs.usda.gov/glti/homepage.html>)

Vegetation will be managed by alternating grazing and rest periods. The length of these periods will be dependant upon the forage species and the relative growth rate and vigor of the forage. The planned grazing sequence should provide significant periods of rest at least every other year during the primary growing season of the key forage species.

Paddocks in a pasture should not be grazed in the same sequence every grazing season. Rotate the grazing sequence from season to season.

Weeds within pastures will be controlled by clipping, spraying with a herbicide, or

by manipulating the timing, intensity, and duration of the grazing regime. (Refer to Pest Management Standard (595).)

During periods of excessive rainfall when mud conditions can become a problem:

- Rotate the livestock through the grazing system at a faster than normal pace, or
- Place livestock in a “sacrificial paddock” which will take the brunt of the abuse, allowing the rest of the pasture to avoid damage. (This sacrificial paddock should be an area of good trafficability, accessible for supplemental feed, and a slight risk of soil erosion, and have minimal impact on water quality.) If sufficient amount of damage occurs in the sacrificial paddock, rehabilitation is required to establish a good vegetative cover. This may be accomplished by reseeding or with an extended rest period.

Maintain healthy and vigorous vegetative cover on wildlife lands and permanent easement areas. Allowing limited and closely managed grazing of herbaceous vegetation is beneficial to long term stand quality and diversity. Grazing of wooded habitat should be based upon the expected or planned effects of the livestock on the plant community. Consideration must be given to the reproductive requirements on the wildlife species of concern on the site. See conservation practice standard Upland Wildlife Habitat Management (645) for recommendations.

### Considerations.

Supplemental feed may be necessary to meet the desired nutritional levels for animals of concern. Placement of

supplemental feed should be carefully considered to reduce negative impacts to soil, water, air, plant, animal, and cultural resources.

Placement of feed, water, salt, or minerals may be used as a planning tool for achieving better uniformity of grazing.

Grazing corn residues and stockpiled forage can extend the grazing season. This can reduce production costs, directly return manure to the land, and provide other benefits to the producer. Consideration should be given to including these forage sources in a grazing system.

Use of natural or artificial shelter will be included as part of this practice when conditions demand.

Provide water to each paddock to better utilize the grazing efficiency of the animal. If livestock must travel to a water source, travel lanes should be on the contour, where possible, and/or conservation practices installed to control erosion.

Animal husbandry requirements that may affect the design of the grazing prescription will be considered. Such requirements include breeding season, method of breeding (artificial insemination or natural), and feed requirement in relationship to kind and class of animal.

Prescribed grazing should consider the needs of other enterprises and multiple uses that utilize the same land, such as wildlife and recreational uses.

Other standards that may be used in combination with Prescribed Grazing include Pipeline (516), Trough and Tank (614), Pasture and Hayland Planting (512), Fencing (382), Heavy Use Area Protection (561), Nutrient Management

(590), Wetland Wildlife Habitat Management (644), Upland Wildlife Habitat Management (645), and Pest Management (595).

## PLANS AND SPECIFICATIONS

Specifications for the establishment of prescribed grazing shall be prepared for each site or management unit according to the Criteria, Considerations, and Operations and Maintenance described in this standard. The system shall be recorded according to Documentation. Procedures, technical details, and other information listed below provide additional guidance for carrying out selected components of Prescribed Grazing.

Prescribed grazing plans will be recorded in a manner that is readily understood and useable by the decision maker in their daily operations. The manner of documentation will depend on the size and complexity of the operating unit and the details required for a grazing prescription.

A prescribed grazing plan should include the following information:

1. Documentation of the expected forage quantity and quality for each management unit(s) (i.e., pasture or paddocks) during the grazing season (See Table 2).
2. Documentation of the number of domestic livestock by kinds and class and the number of grazing/browsing wildlife of concern anticipated within the management unit(s) (See IA Ag. 5).
3. Documentation of forage surpluses and deficiencies for each kind and class of livestock and grazing/browsing wildlife of concern in the management unit(s).

4. Supplemental feed requirements needed to meet the desired nutritional level for the kind and class of livestock and grazing/browsing wildlife of concern in the management unit(s).
5. Development of a planned grazing schedule for livestock, which identifies periods of grazing, rest periods, and other treatment activities for each management unit. When in a Managed Intensive Grazing program, livestock movement should be made according to plant growth and regrowth. (See Tables 1 and 2 and National Range and Pasture Handbook.)
6. A monitoring program should be established that documents the actual grazing dates, rest periods, climatic conditions, livestock performance and vegetative utilization, and changes over time. This information is used to analyze results and to develop the following years' grazing schedule.
7. Days of grazing and frequency of rotations are based upon assumed levels of forage production. The timing of rotations through the grazing system will depend upon the actual production in the field. When estimating production, do so in a conservative manner to reduce the likelihood of having to utilize stored feed. In addition, evaluation of the pasture for productivity, the vigor and stability of the desired plant community, and soil and water resources should be monitored on a regular basis as part of the grazing plan. (See USDA-NRCS Guide to Pasture Condition Scoring and the Pasture Condition Score Sheet from Grazing Lands Technology Institute.) Refer to the following site:

<http://www.ftw.nrcs.usda.gov/glti/homepage.html>

8. A contingency plan that details potential problems, i.e., drought, flooding, and a guide for adjusting the grazing prescription to ensure resource management and economic feasibility without resource degradation may be developed.
9. Locations of fences and identification of the type of fence. Refer to Fence Standard (382).
10. Include a description of the livestock watering system, including source of water, pumping method, and drinking facility locations. Refer to practice standards for Pipeline (516) and Trough or Tank (614).

In addition to the above, a plan should also contain the following:

1. Soil Map \*
2. Plan map that includes:
  - Permanent Fencing \*
  - Anticipated Paddock Divisions \*
  - Water Systems (sources) \*
  - Types of forages \*
3. Total acres \*
4. Pasture or Forage Balance worksheet \*
5. Soil Erosion Control \*
6. Livestock record keeping including: kind, breed, size of livestock, and gain/production \*
7. Pest & Nutrient Management Plan

8. Forage record keeping including plant species/paddock, grass heights before and after grazing days/ paddocks, etc.

\*The above items marked with an asterisk should be recorded as minimum documentation requirements in a grazing plan.

The use of computer programs such as GLA, Iowa Forage and Livestock Balance Worksheet, or other developed and approved programs within the state are also considered adequate documentation if they contain the information outlined under Plans and Specifications in this standard.

### **Definitions of various types of grazing systems.**

**Deferred Rotation Grazing:** Deferred rotation grazing generally consist of multi-pasture, multi-herd system designed to maintain or improve forage productivity. Stock density is moderate, and the length of the grazing period is longer than the deferment period. An example of a deferred grazing system would be the four pasture, three herd Merrill System. This type of system grazes three herds of livestock in four grazing units with one unit being deferred at all times. Livestock numbers are balanced with the available forage in all four grazing units. Each grazing unit is deferred about four months, which allows for the same grazing unit to not be grazed the same time each year. This system repeats its rotation schedule every four years. (See figure 5-2 in National Range & Pasture Handbook.)

**Rest Rotation Grazing:** Rest rotation grazing consists of either (multi-pasture – multi-herd) or (multi-pasture – single herd) with prescribed rest periods between grazing periods. Stock densities are moderate to heavy

depending on the number of livestock herds. Rest periods are longer than grazing periods. Grazing periods are set so that no grazing unit is grazed the same time of year during the cycle of the system. (See Rest rotation system model Figure 5-3 in National Range and Pasture Handbook.)

**Managed Intensive Grazing:** Grazing is conducted in a planned sequence on five or more paddocks with rest periods so each pasture receives adequate rest between grazing periods. The length of the grazing period is moderate to short and the rest period is long. The rest periods will vary depending upon grass growth rate. In the spring, during rapid plant growth, rest periods may be as short as 12 days. During periods of slow plant growth, such as the summer months, the rest period may need to be increased to 35 or more days.

See National Range and Pasture Handbook Chapter 5 for different grazing systems or variations in the above three grazing systems.

## **OPERATION AND MAINTENANCE**

**Operation:** The manager will apply Prescribed Grazing on a continuing basis, making adjustments as needed to ensure that the concept and objectives of its application are met.

**Maintenance:** The Prescribed Grazing schedule will specify when evaluations of the current feed and forage supply should be made. If an imbalance in the forage supply is determined, planned goals and objectives are not being met, or if degradation of any of the resources including animal performance is occurring, the prescription should be adjusted accordingly or other harvesting techniques applied.

## REFERENCES

Pastures for Profit: A guide to Rotational Grazing, University of Wisconsin-Extension and University of Minnesota Publications A3529.

Grazing Systems Planning Guide, University of Minnesota Extension and USDA/NRCS

<http://www.extension.umn.edu/distribution/livestocksystems/DI7606.html>.

Grass: The Stockman's Crop, How to Harvest More of It, Published by Sunshine Unlimited, Inc., P.O. Box 471, Lindsborg, Kansas 67456.

These publications are available at County Extension Offices; Extension Distribution Center, Printing Building, Iowa State University, Ames, IA 50011; and several are available on the ISU Publications Home Page at <http://www.extension.iastate.edu/Pages/pubs/>.

- Taking a Good Soil Sample, ISU PM-287.
- Interpretation of Soil Test Results, ISU PM-1310.
- Fertilizing Pastures, ISU PM-869.
- Improving Pastures by Frost Seeding, ISU PM-856.
- Warm season Grass for Hay and Pasture, ISU PM-569.
- Forage Sampling and Sampling Equipment, ISU PM-1098b.
- Interseeding and No-Till Pasture Renovation, ISU PM-1097.
- Pasture Management Guide for Livestock Producers, Iowa State University Extension.

The following conservation practice standards and information is available at

the Iowa NRCS Home page at: <http://www.ia.nrcs.usda.gov>

- Prescribed Burning (338)
- Fencing (382)
- Pasture and Hayland Planting (512)
- Pipeline (516)
- Heavy Use Protection (561)
- Nutrient Management (590)
- Pest Management (595)
- Trough and Tank (614)
- Wetland Wildlife Habitat Management (644)
- Upland Wildlife Management (645)
- USDA-NRCS National Range and Pasture Handbook.
- Profitable Pastures, A Guide to Grass, Grazing and Good Management, Produced by USDA Natural Resources Conservation Service.



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TABLE 1

## GRAZING MANAGEMENT

	<u>Begin Grazing</u>	<u>End Grazing</u>	
	Minimum Height Vegetative Growth <u>2/</u> <u>5/</u> <u>6/</u>	Minimum Stubble Height	Minimum Regrowth Before Killing Frost <u>3/</u> <u>4/</u>
Forage <u>1/</u>	Inches	Inches	Inches
Kentucky Bluegrass	4-6	2	4
Orchardgrass	6-10	4	6
Bromegrass	6-12	4	6
Tall Fescue	6-10	4	6
Reed Canarygrass	8-10	4	6
Timothy	6-10	3	5
Switchgrass	16-20	6	6
Indiangrass	12-16	6	6
Big Bluestem	10-16	6	6
Eastern Gamma Grass	10-16	8	8
Birdsfoot Trefoil	6-10	4	6
Red clover (1 <sup>st</sup> grazing)	¼ - ½ bloom	2	--
Red clover (2 <sup>nd</sup> grazing)	¼ bloom	2	8
Alfalfa <u>4/</u> (1 <sup>st</sup> grazing)	Full Bud	2	--
Alfalfa <u>4/</u> (2 <sup>nd</sup> and 3 <sup>rd</sup> grazing)	¼ bloom	2	10
Crownvetch	8-10	3	6

**TABLE 1**

- 1/ Grass and legume mixture should be grazed in a manner that favor the dominant or desired species.
- 2/ Height is average height when leaves are lifted in vertical position.
- 3/ At end of growing season, minimum regrowth is the critical factor that determines end of grazing except on pastures grazed only in fall and winter. When a grazing period ends, there should be photosynthetic residual remaining adequate to support vigorous regrowth. Less regrowth may be beneficial if frost seeding or interseeding will be accomplished prior to the next grazing season.
- 4/ The last harvest of alfalfa, for pasture or hayland, should be made 35 to 45 days prior to the time when the first freeze normally occurs.
- 5/ In a rotational grazing system, spring grazing can be initiated when cool season forages have approximately 75% of their height as shown above. Livestock will need to be moved more rapidly until they are in a paddock where forage has grown to the desired height.
- 6/ If forages are exceeding the "Begin Grazing" heights consideration should be given to making hay or mowing these paddocks.

TABLE 2

**FORAGE AVAILABILITY GUIDE**

SPECIES	Percent of Total Growth by Month												Remarks
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	
60% Kentucky Bluegrass 40% Tall Cool Season Grasses	0	0	0	8	32	27	11	6	11	5	0	0	
Kentucky Bluegrass	0	0	0	7	35	28	10	5	10	5	0	0	
Alfalfa and Smooth Bromegrass	0	0	0	8	25	22	15	12	13	5	0	0	
Kentucky Bluegrass and Legumes	0	0	0	10	25	25	20	10	10	0	0	0	
Smooth Bromegrass	0	0	0	8	28	27	12	8	12	5	0	0	
Alfalfa	0	0	0	10	25	20	15	15	10	5	0	0	
Mixed Tall Cool Season Grasses and Legumes	0	0	0	5	25	25	15	15	10	5	0	0	
Tall Warm Season Grasses	0	0	0	0	0	15	45	30	10	0	0	0	
Corn Stover	10	0	0	0	0	0	0	0	0	0	50	40	
Tall Fescue and mixed Grasses	0	0	0	8	22	25	15	10	8	8	4	0	
Tall Fescue, Mixed Grasses And Legumes	0	0	0	6	21	22	18	15	10	5	3	0	
Tall Cool Season Grass Using a 1-8 Paddock Rotation	0	0	0	8	23	23	14	12	16	4	0	0	
Tall Cool Season Grass And Legumes using a 1-8 Paddock Rotation	0	0	0	8	20	20	18	12	18	4	0	0	
Tall Cool Season Grasses And Legumes using a 8-15 Paddock Rotation	0	0	0	9	19	19	17	13	19	4	0	0	
Tall Cool Season Grasses And Legumes using a 15 + Paddock Rotation	0	0	0	10	18	18	17	15	18	4	0	0	

**TABLE 2**

1/ To determine estimated pounds of forage produced per month, look up the total estimated forage production by soil type from the County Soil Survey, convert forage yields from ton/acre or AUMs to lbs of dry matter and multiply by the percent of total growth by month. See IA Job Sheet Agronomy 5.

To convert from Animal Unit Months (AUM) or Tons of Hay per acre per year to pounds of dry matter produced per acre per year use the following formulas:

$\text{AUM} \times (790) \text{ divided by } 0.4 = \# \text{ Dry Matter/Acre/Year}$

AUM = Animal Unit Months

790 = pounds allocated to an AUM (National Range & Pasture Handbook)

0.4 = factor used to convert AUM value to the amount of forage the soil is capable of producing

$\text{Tons of Hay/Acre divided by } 0.9 = \# \text{ Dry Matter/Acre/Year}$

0.9 = factor used to account for the forage produced but not harvested, i.e. left for regrowth, wasted and etc.